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ABSTRACT

The purpose of this study was to compare women in divergent college majors with women in high school on a number of background and attitude variables. A random sample of 100 female senior University students majoring in education or science and 43 female students from a Montgomery County high school were sent questionnaires. Results indicate that education majors as opposed to science majors are: more likely to feel their parents' ideas were an important determinant of their career choice; more likely to be interested in working with or helping people; less likely to be career oriented; more likely to attach importance to a stable future in a career; more likely to get advice and affection from their parents; and their mothers are likely to do volunteer work or have hobbies. Female high school students had attitudes and backgrounds more similar to the education majors than the science majors. Overall, the results indicate the education majors have backgrounds and attitudes more similar to the traditional female role in society. Science majors often persist in masculine careers in spite of societal disapproval. Results are discussed in terms of previous research and implications for counseling. (Author/HS)

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CAREER ORIENTATION OF UNIVERSITY AND HIGH SCHOOL WOMEN

Michele H. Herman and William E. Sedlacek

Research Report # 12-72

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The purpose of the study was to compare women in divergent college majors (education vs. science) with women in high school on a number of background and attitude variables. A random sample of 100 female senior University students majoring in education or science (physics, biology, mathematics, chemistry and pre-medicine) were sent questionnaires. A 66% return rate (30 science majors and 36 education majors) was achieved. Forty-three female students from a Montgomery County high school were also included in the sample. Using χ^2, t and discriminant analysis at the .05 level, results, in part, indicate that education majors as opposed to science majors are: more likely to feel their parents' ideas were an important determinant of their career choice, more likely to be interested in working with or helping people, less likely to be career oriented, more likely to attach importance to a stable future in a career, more likely to get advice and affection from their parents, and their mothers are likely to do volunteer work or have hobbies. Female high school students had attitudes and backgrounds more similar to the education majors than the science majors. Overall the results indicate the education majors to have backgrounds and attitudes more similar to the traditional female role in society. Science majors often persist in masculine careers in spite of societal disapproval. Results are discussed in terms of previous research and implications for counseling.

Career orientation of college women is a subject which is receiving renewed attention in view of the feminist stirrings in our society. Contrary to the belief of many, there is no equality in careers. The *Congressional Record* (1970) tells us that among government employees at grades 3,4,5, where the salaries are low, there are many women employed, but that at grades 16, 17 and 18, where salaries are high, fewer than one percent of these positions are filled by women. The same report mentioned that at a time when national unemployment has reached a high of approximately six percent, among nonwhite females looking for jobs the unemployment rate is 37.3 percent.

Dole (1964) shows that many of the determinants of educational choice are quite similar to occupational choice and are consistent with expected American adult sex roles. Whether this is due to lack of interest by women in certain careers or whether it is due to early occupational channeling and/or knowledge of unequal hiring situations, will not be discussed here. What is of interest here is what variables influence college and high school women to be career or non-career oriented.

Rand (1966) found that career oriented women are more masculine than homemaking oriented women on measures of interest, personality, achievement, competency, potential and self-perceptions. Almquist and Angrist (1970) and Angrist (1972), in an extensive longitudinal study of women, found that role models followed by career-oriented women differed widely from those of non-career oriented women. Career women tend to have greater exposure to occupational choices of male peer groups, have working mothers, a greater variety of work experiences themselves, and feel influenced by faculty members and occupational role models in choosing an occupation. Non-career oriented women more often tend to be sorority members, attached to a male, to have mothers active in leisure pursuits and to feel influenced

by family members in choosing an occupation. Results indicate that career and non-career women do not differ so much in types of reference groups as in the content of such influences.

This study investigated variables influencing women students at the University of Maryland in their choice of career. Since research indicates that the more masculine the career chosen by a woman, the more she aspires to high career achievement (Rossi, 1967), it was predicted that role models influencing education majors (traditional careers) would be similar to those of the Almquist and Angrist study's non-career salient women, while science majors (masculine careers) would follow models for career salient women. Additionally, the backgrounds of a group of high school women were examined to find out if career orientation is determined at an earlier age.

Method

Variables that were studied were type of major chosen (education or physics, biology, mathematics, chemistry and pre-medicine) and attitudes influencing career decisions. All college students were senior women at the University of Maryland and high school students were from a single school in Montgomery County, Maryland.

Procedure

Procedure

A stratified random sample of female senior University students was chosen within education (N=50) and science (N=50) majors. Students were mailed a questionnaire, and followup letters resulted in a 66% return. All female students in three high school classrooms (N=43) completed the questionnaire. Data were then analyzed using χ^2, t and discriminant analysis.

Results and Discussion

Education and Science Majors: Almquist and Angrist (1970) suggest that career oriented women are less frequently associated with reference groups or social activities which reflect the traditional female role. While both career oriented

and non-career oriented women have the family as a reference group, the contents of the influence differ. Career oriented women have been more influenced by teachers and persons in a given occupation, whereas non-career women are more influenced by family and peers in their occupational choice. Data from this study indicate that the analogy holds for groups of education majors and science majors. Education majors more often indicated that their parents' ideas of success were important determinants of their career choice, whereas science majors were less likely to agree (Table 1). This relationship also shows up in questions concerning parent-child interaction.

Table 1 shows there are further differences between the two groups in terms of important features of occupational choice and opinions on a number of variables. Education majors, not surprisingly, are more interested in working with people and helping people than are science majors. Science majors, interestingly enough, attach less importance to a stable future in choosing an occupation than do education majors. This suggests that education majors must seek outside approval in their occupational choice before being themselves satisfied; seeking outside approval usually being a traditional female characteristic. Again, education majors follow a non-career pattern in that career women enter their occupations often in spite of societal approval rather than for it. Finally, education majors more often were interested in an occupation which permitted the combination of career and good family life.

Table 1 shows that there were surprisingly few differences in conditions under which science or education majors would or would not work. Number and age of children and adequate or inadequate salary of husband seemed to make little difference. The exception, where there was one or more preschool children and the husband's salary was adequate, shows that science majors would continue to work, whereas education majors would care for their children (t, $p < .05$). The commitment

to a career is apparently stronger among science majors, but these results suggest that it would be wrong to imply that this group of education majors is non-career salient. Furthermore, there were no differences on opinions of the domestic duties that men and women should do, with most women in each group expecting some assistance in child rearing and household chores. It must be concluded that many of the influences that impinge on non-career oriented women likewise affect education majors in the sample. These women are, to a large degree, career-oriented, although less so than science majors.

In an attempt to provide a profile of women's career orientation, a linear discriminant analysis was computed on 25 of the 31 continuous items of the questionnaire, using the two college groups: science and education majors. Prediction of group membership was quite efficient, with the resulting weights correctly predicting 87% of the science majors and 86% of the education majors. The discriminant weights are shown in Table 1. These weights represent the contribution made by each variable in distinguishing science and education majors in combination with all other variables. If each weight is multiplied by a given student's score on each item and added up, the higher the resulting score the more likely she is to be a science major. The technique differs from t in that t considers each item independently, while discriminant analysis considers the contribution of each item, given that each other item will also be used.

Results of χ^2 analyses (.05 level) showed that science majors felt they got less advice from their parents and less sympathy and affection than did education majors. Also the parents of education majors were better listeners. Another parent variable, mother's activities, served to further differentiate between the two groups. Mothers of education majors were more often involved in volunteer work or hobbies than were mothers of science majors. This further confirms the often stated hypothesis that working mothers serve as role models for working daughters (Siegel and Curtis, 1963; White, 1967; Astin, 1968).

College and High School Women: Several characteristics of the high school group must be discussed at this point. Although the high school selected is in a high income county (in suburban Washington, D.C.), the school itself includes a cross-section of students from all socioeconomic levels. Many of these students will not be going on to college and most of the women will likely go into low income and/or low prestige occupations where they will remain only until marriage or the first child. For this reason, many of the results will be generally quite different from those of the college group. This manifests itself first by the importance attached to going to college and achieving. The high school sample found it less important to graduate from college and to go on to graduate school than did the college group (t,$p < .05$).

That the high school group overall is less career-oriented is indicated by their answers to the work items. For them it is less important to work after their children grow up than it is for the college group and more college students state an interest in working full or part time while married and a mother (t,$p < .05$). When they are interested in work, the high school group is more influenced by monetary features of the occupations than the college group: it is important for them that the occupation have high income and a stable future (t,$p < .05$). It is also more important for them than for the college group that they work with people and help others (t, $p < .05$).

On the whole, the parent-child relationship of the high school group seems more strained. More fathers dismiss their daughter's problems as unimportant in this group, more parents are hard to talk to, more parents criticize their child unfairly, and more have little time for their children (t, $p < .05$). It must be remembered that these students are still in (or just barely out of) their adolescent crises, where the family relationships are usually quite strained. This striking difference may also be due to the fact that there are more working-class

families in the high school group and that this group is usually less child-oriented than is a middle class group of parents.

Another striking difference is found on opinion items. The high school group adheres more closely to stereotyped sex roles. They feel quite strongly that a mother should personally care for her young children during the day, and that raising children is a mother's job (t, $p < .05$). As regards the male role, they tend to think that asking a man to help in the kitchen or do household chores is inappropriate (t, $p < .05$).

On the whole, the high school group fits the classical non-career orientation profile, both in terms of their expectations and work interests and their opinions and life styles.

Overall, this study provides some clear cut differences between women planning traditional less career-oriented occupations such as teaching and those planning a more strongly career-oriented occupation in a field of science. This information should aid counselors or those individuals concerned with vocational planning for women.

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Table 1.

Means, Standard Deviations, *t*-tests and Discriminant Weights for Science (N=30) and Education (N=36) Majors

Item	Major	Mean	S.D.	*t*	Discriminant Weight
4. How important do you think the following features of an occupation have been or will be in influencing your choice of a field or work ? (1=very important, 5=completely unimportant)					
1. Occupation has high prestige	Science Education	2.70 2.33	0.90 1.08	1.46	0.29
2. Involves work with people rather than alone or with things	Science Education	4.43 2.67	0.76 1.33	6.34*	1.77
3. Provides freedom from close supervision	Science Education	3.43 3.56	0.99 1.36	-0.40	-0.40
4. Has prospect of high income	Science Education	2.73 2.22	1.03 1.03	1.98	0.23
5. Allows use of special abilities	Science Education	4.20 3.97	0.79 1.07	0.95	0.55
6. Provides stable, secure future	Science Education	3.93 2.89	0.96 1.22	3.75*	0.35
7. Suits parents' ideas of success	Science Education	2.43 1.72	1.07 0.84	2.96*	0.99
8. Involves helping others	Science Education	4.27 3.22	0.73 1.27	3.93*	0.07
9. Allows combining career and good family life	Science Education	4.43 3.11	0.80 1.33	4.69*	0.45

Table 1. Continued

Means, Standard Deviations, *t*-tests and Discriminant Weights for Science (N=30) and Education (N=36) Majors

Item	Major	Mean	S.D.	*t*	Discriminant Weight
6. Rate yourself on whether you would want to work under each condition (1=definitely would; 5= definitely not)					
1. No children; husband's salary adequate	Science Education	4.27 4.58	0.89 0.95	-1.36	**
2. No children, husband's salary inadequate	Science Education	4.83 4.64	0.73 1.03	0.85	0.37
3. One child of pre-school age; husband's salary adequate	Science Education	2.13 2.94	1.02 1.37	-2.63*	-0.65
4. Two or more children of pre-school age; husband's salary adequate	Science Education	1.87 2.53	0.96 1.42	-2.13*	-1.02
5. One child of pre-school age; husband's salary not adequate	Science Education	3.93 3.89	0.89 1.24	0.16	0.74
6. Two or more children of pre-school age; husband's salary not adequate	Science Education	4.00 3.89	0.89 1.22	0.40	**
7. One child of school age; husband's salary adequate	Science Education	3.53 4.19	0.99 1.08	-2.54*	-2.03
8. Two or more children of school age; husband's salary adequate	Science Education	3.53 4.08	1.02 1.16	-1.99	**
9. One child of school age; husband's salary not adequate	Science Education	4.53 4.47	0.85 0.89	0.28	**

Table 1. Continued

Means, Standard Deviations, *t*-tests and Discriminant Weights for Science (N=30) and Education (N=36) Majors

Item	Major	Mean	S.D.	*t*	Discriminant Weight
6. Rate yourself on whether you would want to work under each condition (1=definitely would; 5=definitely not) Continued -					
10. Two or more children of school age; husband's salary not adequate.	Science Education	4.57 4.53	0.84 0.99	0.17	0.61
11. Children have grown up and left home; husband's salary adequate	Science Education	4.10 4.50	0.91 0.73	-1.96	-0.43
12. Children have grown up and left home; husband's salary not adequate	Science Education	4.70 4.61	0.78 0.89	0.42	0.25
8. How important is it to you to graduate from college? (1=very important, 4= not important)	Science Education	1.07 1.31	0.25 0.66	-1.85	-1.86
9. How much importance do you attach to getting good grades in college? (1=a great deal, 4=none at all)	Science Education	1.63 1.67	0.66 0.63	-0.20	-0.18
15. How strongly do you feel that a mother with children between the ages of one month and six years should personally care for her young children throughout the day? (1=very strongly; 5 = not strongly)	Science Education	3.87 3.17	1.15 1.38	2.16*	0.86

Table 1, Continued

Means, Standard Deviations, *t*-tests and Discriminant Weights for Science (N=30) and Education (N=36) Majors

Item	Major	Mean	S.D.	*t*	Discriminant Weight
20. Indicate the extent to which you agree or disagree with the following statements (1=strongly disagree; 5=strongly agree)					
1. Raising children is more a mother's job than a father's	Science Education	3.70 3.97	1.10 1.07	-1.00	-0.17
2. Except in special cases, the wife should do the cooking and house-cleaning and the husband should provide the family with money.	Science Education	3.30 3.81	1.19 1.05	-1.81	-0.38
3. If the man is working to support the family, his wife has no right to expect him to work when he's home	Science Education	4.10 4.17	0.65 0.89	-0.33	0.53
4. A man who helps around the kitchen is doing more than should be expected	Science Education	4.17 4.33	0.52 0.62	-1.15	-0.11
5. A man ought to feel free to relax when he gets home from work.	Science Education	2.17 2.13	1.07 0.95	0.11	0.12

* Significant at $p < .05$
** Not included in analysis